

## The structure of social capital in Austria: Subjective and objective determinants

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**Abstract** This paper seeks to address the relationship between social capital and perceived social origin in contemporary Austria. While the concept of social capital has been widely adopted in social sciences, so far research on the (pre)structured shape of social capital by social origin is scarce. Our aim is to close this gap. Therefore, we use the network-as-capital approach by following the “position generator” and apply latent class analysis (LCA) and path modelling on the basis of the 2018 Austrian Social Survey. The dataset comprises a representative sample of the Austrian residential population aged 18 and older. Our findings show that the diversity of social capital, and access to networks of people in more highly ranked positions is strongly influenced by one’s social background. The higher respondents assess their social origin, the greater the probability of being in this type of network. Furthermore, education and occupation have effects on membership in a class-specific network.

**Keywords** Social capital · Social origin · Position Generator · Latent Class Analysis · Path modelling · Austrian Social Survey

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## Die Struktur des Sozialkapitals in Österreich: Subjektive und objektive Determinanten

**Zusammenfassung** Dieser Artikel untersucht die Beziehung zwischen Sozialkapital und subjektiver sozialer Herkunft in Österreich. Während das Konzept des Sozialkapitals in den Sozialwissenschaften weit verbreitet ist, gibt es bisher kaum Forschung über die (vor)strukturierte Form des Sozialkapitals nach sozialer Herkunft. Unser Ziel ist es, diese Lücke zu schließen. Dafür verwenden wir den „Network-as-Capital“-Ansatz in Anlehnung an den „Position Generator“ und wenden eine Latent Class Analysis (LCA) und ein Pfadmodell auf der Basis des Sozialen Survey Österreich (SSÖ) 2018 an. Der Datensatz umfasst eine repräsentative Stichprobe der österreichischen Wohnbevölkerung über 18 Jahre. Unsere Ergebnisse zeigen, dass der Zugang zu Netzwerken, die sich durch hierarchisch höhere Positionen auszeichnen, stark durch den sozialen Hintergrund beeinflusst wird: Je höher die Befragten ihre soziale Herkunft einschätzen, desto höher ist die Wahrscheinlichkeit, in einem solchen Netzwerk zu sein. Darüber hinaus haben Bildung und Beruf Auswirkungen auf die Zugehörigkeit zu einem klassenspezifischen Netzwerk.

**Schlüsselwörter** Sozialkapital · Soziale Herkunft · Position Generator · Latent Class Analysis · Pfadmodell · Sozialer Survey Österreich

### 1 Introduction

A great number of sociologists, political scientists and economists, have invoked the concept of social capital in the search for answers to a broadening range of questions in their own fields (Bourdieu 1985). Scientific literature suggests that social capital refers to the resources engendered by the fabric of social relations, which can be mobilized to facilitate individual actions (Coleman 1988). For sociologists it is crucial to understand social capital not only as an individual achievement but also as part of the social structure. Not all individuals or social groups uniformly acquire social capital or receive expected returns from their social capital (Lin 2000, p. 786). Nor do all individuals or social groups uniformly acquire the ‘same’ social capital; e.g. here we can differentiate between bridging and bonding configurations of social capital.<sup>1</sup> Instead social capital and the access to relevant networks are (pre)structured by social origin (Bourdieu and Wacquant 1992) and therefore (re)produce societal power. This is particularly relevant in terms of social inequality, as existing studies on social capital have provided evidence of social capital’s pervasiveness and offered useful impressions of its political, economic, and social influence, as well as suggesting that it might be an important resource for the implementation of public

<sup>1</sup> The literature highlights differences between bridging and bonding social capital; bridging social capital refers to open networks that are outward looking and encompass people across diverse social cleavages, while bonding social capital consists of inward looking networks that tend to reinforce exclusive identities and homogeneous groups (for example family or close friends) (Larsen et al. 2004; Coffé and Geys 2007).

policies (Montgomery 2000). Given these findings, it is surprising that to date comprehensive studies understanding the relationship between social capital and social origin or the subjective assessment of one's roots remain scarce (cf. van Tubergen and Volker 2015).

This is also the case in Austria. Previous studies in this field primarily focused on the general constitution of social capital in Austria. For example, the Legatum Institute Prosperity Report (2016) indicated that Austria's overall social capital score—which measures the strength of cohesion and networks in society—dropped by 8% between 2007 and 2016. Important findings in this context are provided by Pichler and Wallace (2009), who found in their cross-national study that Austria in the early 2000's—as part of the Western-Central European region—had moderate levels of formal and informal social capital compared to other European countries. In their follow-up analysis on the relationship between social class, types of social networks, and social stratification in Europe, the authors show that social capital is strongly socially stratified (Pichler and Wallace 2009). We take this as a starting point in the present article.

Our aim is to describe the relationship between social capital and one's subjective assessment of social origin in Austria, which has not been done before, whilst taking objective indicators such as income, gender, education and occupation into account. Therefore, our main research question is: *To what extent is social capital related to one's perceived (subjective) social origin in Austria and how is this relation mediated by other (objective) social structural variables?* To achieve this goal, we use the latest available data from the 2018 Austrian Social Survey (Sozialer Survey Österreich, SSÖ) and apply latent class analysis (LCA)<sup>2</sup> and path modelling. To begin with, we use the position generator (van der Gaag et al. 2008; Lin et al. 2001; Lin 2001a) in order to empirically measure social capital. Hereafter we apply path modelling to analyze the relation between social capital and social origin—which is operationalized through the self-assessment of one's family background—including personal income, gender, education and occupation of the respondents. The article is structured as follows: in the first part, we provide a theoretically informed concept of social capital and an overview of the discussion of social capital and social origin in the research literature. The paper proceeds with the methodological design of the study presenting the variables and measurement tools. After illustrating the findings of our empirical study, we conclude with an outlook on future research questions.

## 2 A theoretically informed concept of social capital

The idea of social capital has been discussed by a great number of authors from a variety of disciplines since the early decades of the twentieth century (van Oorschot et al. 2006, p. 150). In line with that, social capital has been subject to considerable scrutiny, both empirical and theoretical, which seems to have produced a gulf between the theoretical understanding of social capital and the various ways social

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<sup>2</sup> To avoid confusion between the terms 'social class' and 'latent class', in the following we will use the term 'group' when describing latent classes; the term 'class' refers to social classes.

capital has been measured in empirical work to date (Stone 2001). This leads to a broadening differentiation concerning the meaning, measurement and relevance of social capital (Lin and Erickson 2008). Furthermore, the understanding of social capital strongly depends on the research design and available data (Van Deth 2003), which reinforces the necessity to refer and explain the underlying links between the theoretically informed measurement framework for the empirical investigation of social capital in this article.

We employ a concept of social capital which refers to valued resources that generate returns to individual and collective actors in a society (Lin and Erickson 2008). These resources are captured in social relations and their production is a process by which the surplus value is generated exactly through the investment in social relations (Lin 2001a). Therefore, “Social capital argues for investment in social relations so that resources embedded in these relations become the mechanism with which individual and collective actors gain advantage” (Lin and Erickson 2008, p. 4). This understanding of social capital being network based is acknowledged and implemented by a large number of scholars (Lin and Erickson 2008; Erickson 2004; Bourdieu 1985; Coleman 1988; Burt 1984; Flap 1991; Pichler and Wallace 2009; van der Gaag et al. 2008). For example, Putnam (1995) defines social capital as “connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them”. At its core, Bourdieu particularly highlights the importance of connections between individuals in social networks, when stating that social capital is “the sum of resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutional relationships of mutual acquaintance and recognition” (Bourdieu and Wacquant 1992, p. 119). And finally Burt (2000, p. 345) even argues that research will benefit “if we focus on the network mechanisms responsible for social capital effects rather than trying to integrate across metaphors of social capital loosely tied to distant empirical indicators” such as being “better connected”. Based on this premise, we further assume that social networks do not inherently belong to individuals but rather they are resources accessible through one’s direct and indirect ties (Lin and Erickson 2008). Consequently, social networks enable an actor to borrow other actor’s resources (such as for example information), which in turn can be used to generate expected returns (Lin and Erickson 2008).

Given the significance of social networks we accentuate their role in our concrete conceptual framework (Portes 1998; Burt 1984; Bourdieu 1985; Coleman 1990, 1988; Putnam 1995). We apply a network-as-capital approach that focuses on analyzing the position of the individual inside social networks (Adam and Rončević 2003) by following Lin’s “position generator” (Lin 2001a).<sup>3</sup> The basic idea is to ask respondents whether they know people in different social positions or occupations; thus serving as a reasonable proxy for the volume and the nature of social connections, in other words the type and the quantity of social resources accessible to the respondent (Li et al. 2008, p. 393; Lin et al. 2001, p. 63).

<sup>3</sup> Lin and Erickson (2008, p. 1) emphasize the importance of a common definition of social capital, employing the position generator methodology as standard measurement, since multidimensional concepts bear the danger of becoming a “handy catch-all, for-all, and cure-all sociological term”.

By assessing whether people know others in social positions or occupations similar to or different from their own, it provides a way of measuring the stratified character of social networks, and the extent to which respondents have contacts spanning different social groups in society. Thus, from the responses it is possible to reconstruct the range of accessibility to different positions in the social hierarchy, the heterogeneity of accessibility to different positions (e.g. number of positions accessed) as well as the upper reachability of accessed social capital (e.g. prestige or status of the highest position accessed) (Lin et al. 2001, p. 63). In line with this, we differentiate whether one primarily has access to people in high(er)-status occupations (*white-collar network*) or low(er)-status occupations (*blue-collar network*). Here we rely on the Socio-Economic Index of Occupational Status which scales occupations by the average level of education and average earnings of job holders. Occupations can be ranked from workers who perform predominantly (lower status) manual work who fall into the group of blue-collar workers, to workers who perform predominantly (higher status) “brain work” who fall into the category of white-collar workers (Schreurs et al. 2010; Ganzeboom 2010). We further differentiate respondents in terms of the diversity of their network, e.g. whether they know people from many professional fields or only from a few areas, indicating diverse or low social capital.

### 3 The relationship between social capital and social origin

The term “social capital” indicates, that there is a possibility of transforming social capital into other kinds of capital and vice versa (Joye et al. 2019). Hence differential access to such resources is an enduring feature of social inequality and a central reason for its reproduction over time (Cook 2014; von Otter and Stenberg 2015). Based on this premise, we find a common understanding in the research literature that social capital is unequally distributed between various social groups (Pichler and Wallace 2009). Overall previous research has shown that the relevance of social capital in the context of social inequality cannot be underestimated since quality and quantity of social capital vary depending on factors such as education, age, ethnic origin, and gender among other things (Bourdieu 1985; Van Emmerik 2006; Smith 2000; Lutter 2015; McDonald and Mair 2010). In fact, Putnam (2002, p. 415) even argues that “social capital may conceivably be even less equitably distributed than financial and human capital”. This conception of social capital is rooted in the social structure and related to the formation of group identities, akin to the arguments of Giddens (1973) and Goldthorpe (1987) on the “structuration” of class. Hereby the main interest lies in assessing the relationship between social position and forms of social interaction (Li et al. 2008). This is particularly important since inequality in social capital contributes to inequality in socioeconomic achievements (Lin 2000): Members of a certain group, clustering around relatively low socioeconomic standings and interacting with others in similar social groupings, would possess less social capital.

Additionally, in corporatist societies such as Austria, the individual’s family background plays a central role. It is a valuable predictor of one’s future position within

social hierarchies, as social positions are quite often preserved across generations (Bacher et al. 2019; Wells et al. 2011; Horvat et al. 2003). Against this background it is all the more surprising that so far we can identify a vast research literature which examines the benefits of social capital, however less is known about the causes of the unequal distribution of social capital (van Tubergen and Volker 2015, p. 3). Lin (2001b, p. 122) even states, that “differential access to social capital deserves much greater research attention”.

Against this background, in our paper we aim to close this research gap by looking closely at the role of the individuals’ social origin as a determinant of their access to social capital. In our study, having personal connections to individuals holding higher status occupational positions or knowing people in occupations with wide-ranging levels of social prestige is indicative of this kind of social capital (Erickson 2004; Van Der Gaag and Snijders 2005; Van der Gaag 2005). Based on this approach, we are interested in learning to what extent access to social capital is contingent on (subjective) social origin and how it is mediated by education and occupation. In this paper we do not base social origin on objective variables (such as parents’ occupation or parents’ educational level) in order to measure social origin. This is partly due to the data set we use, where these variables are simply not available. However, we are also interested in the differences between objective and subjective explanatory variables and their effects on social capital in Austria. Therefore, we ask: What is the connection between the social status of individuals and their accessibility to social resources? Do certain kinds of groups have a higher probability of knowing a wide range of individuals in their networks? To what extent is inequality of access to social capital embedded in the social structure?

Therefore, our main focus lies on the link between *social origin* and social capital. So far, there is a lack of comprehensive studies on this relationship, especially in the context of Austria. While a few studies examined the effect of parents’ class on their children’s social capital (e.g. Andersson et al. 2018), research on the self-assessment of social origin and its relation to social capital remains scarce. To what extent is a higher self-assessment of social origin related to a higher diversity of social capital? Lin (2001b, 2001a) argues that in the upper strata of the social hierarchy, networks tend to be smaller, more dense, and more closed in character than at lower levels. Pichler and Wallace (2009) found that upper strata of society have higher status networks, in particular through associational networks. Based on these findings we assume that *higher self-assessment of social origin is related to a lower diversity of social capital and associated with higher accessibility to white-collar networks (H1)*.

Furthermore, we expect the individual *educational level* of the respondents to exert a significant influence on the networks of individuals. Studies demonstrate that social capital is increased by higher educational attainments (Gesthuizen 2006; Bekkers 2005). Higher education brings the potential to meet people with higher initial positions and better chances to access social capital (Behtoui 2007; Erickson 2004). Gesthuizen et al. (2008) have shown that educational expansion even decreases educational differences in social capital, a finding that is of high socio-political relevance. Based on these previous findings *we expect both the network diversity*

*and the access to white-collar networks to grow with the educational achievement of individuals (H2).*

Much has been written about the relation between social capital and *income or occupations* (Shen and Bian 2018; Verwiebe et al. 2017). Research demonstrates that access to different occupations, and especially to high status occupations, has a positive effect on people's income (Behtoui 2007; Cross and Lin 2008; Lin 2001b). It appears obvious that high income and high occupational status are related to interacting with people in higher occupational positions. However, we would also argue that a higher income is linked to access to people with occupations across a wide range of social prestige levels, in particular in the field of personal services and assistance. In other words, if individuals know someone who will do the grocery shopping for them, they may also know someone who can babysit their children. Therefore, *we assume that higher personal income and higher occupational status is related to higher network diversity (H3).*

In terms of *gender*, it can be assumed that females are disadvantaged in accessing social capital (Volker et al. 2008). The access of women to networks may be affected by their involvement in family-domain activities, as women in Austria still do the majority of household chores and care work (Berghammer 2014). Furthermore, women tend to have less prestigious jobs than men (Fritsch et al. 2019); thus they have less access to more highly qualified occupational groups. Additionally research on homosociality reveals that men tend to have social relations only within their social class—especially in higher occupational positions (Kanter 1977; Holgersson 2013; Fritsch 2015). This is in line with research carried out by Volker et al. (2008) who showed that men are more likely to have access to networks that provide more resources. While other studies came to the conclusion that there are no gender differences concerning access to social capital (Behtoui 2007; Cross and Lin 2008), *we expect women to have a lower network diversity as well as a higher level of access to blue-collar networks than men (H4).*

Furthermore, we would like to investigate to what extent the effect of (perceived) social origin on the structure and size of the social network is mediated by education and occupation. Thus we apply a theoretically informed order in our path model, which accounts for the assumption that education and occupation influence the structure of social capital directly (as well as income) but likewise mediate the effect of social origin on social capital (Bian and Zhang 2001; Geißler 2006). Against this background we briefly address the effects of education and occupation on income, but rather concentrate on the direct and indirect effects (via education and occupation) of social origin on social capital.

## 4 Data, analytic strategy and variables

### 4.1 Data

Our empirical analysis is based on the Austrian Social Survey. This dataset is part of the International Social Survey Programme (ISSP), which is conducted in 45 countries around the world. The Austrian Social Survey is a representative sample of the

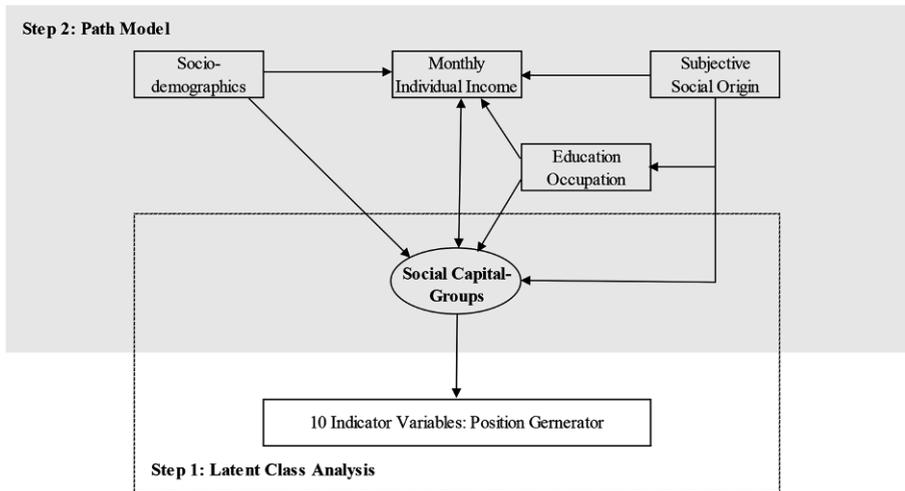
national population aged 18 years and older with special focus on social change in attitudes and value orientations as well as current social issues. To date, the survey has been carried out in the years 1986, 1993, 2003, 2016 and 2018 (Hadler et al. 2019). The present statistical evaluations are based on the Austrian Social Survey for the year 2018 ( $n = 1199$ ). However, the underlying number of observations for the second analytical step (path modelling) includes fewer respondents, since we are only able to include cases with valid information for the income variable ( $n = 858$ ).

## 4.2 Analytical strategy

Our analytical strategy combines *latent class analysis* (LCA) and *path modelling* (Bacher and Vermunt 2010; Vermunt 2010; Hagenaars and McCutcheon 2002). Latent class models belong to the group of generalized finite-mixture models (Owen and Videras 2009, p. 560). The goal of LCA is to assign respondents to classes (groups) that are characterized by similar response patterns (in our case with regard to social capital). Hence, the LCA can be used (1) to empirically assess how many groups the sample should be divided into. (2) We assign each respondent with group-specific probabilities, which reflect the likelihood of belonging to one social capital group or another. The parameters of the models are estimated using maximum likelihood estimators. To evaluate the goodness-of-fit of our models and the number of groups, we use the Akaike information criterion (AIC), the Bayesian information criterion (BIC) as well as the likelihood-ratio (LR).

In line with other research in this field (e.g.: Lin 2001b; Lin et al. 2001; Lin and Dumin 1986; Cross and Lin 2008) we use the variables of the position generator in order to analyze social capital. However, we want to present a slightly different analytic strategy compared to Lin's approach—which has produced substantial and important research—for the following reasons: Lin used the results of the position generator in two consecutive steps in order to analyze the structure of social capital. First, Lin (e.g.: Lin 2001b) created three variables concerning the size and status of the respondent's social network; in a second step he reduced those three variables into one latent social capital variable by employing principal component analysis (PCA). From this point onwards, it is plausible that one could either proceed with analyzing the size and status of social networks simultaneously (whilst using those three variables at once), or one could reduce the information of the position generator into one dimension using PCA. Against this background, in our paper we present an alternative way of analyzing the position generator's results: Using LCA, we assign respondents to groups of individuals that are characterized by specific patterns of social capital. With the help of latent class analysis (LCA) we do not reduce the information of the position generator into one dimension, but instead we combine/interlock these two dimensions—the size and status of the social network—to create a latent *categorical* variable. Therefore, we expect that LCA can be used to map the interdependence of the two dimensions: the quality and quantity of social capital, as described below.

The results of the LCA are subsequently integrated into a path model (Duncan 2013) where we use the estimated posterior probabilities of an individual to be in a certain social capital group as a metric variable. Path modelling allows estimating



**Fig. 1** The relationship between subjective social origin and social capital shown with analytical steps. (Single arrow: directed correlation, double arrow: undirected correlation. Socio demographics is including education, occupation, gender, age and migration background)

(theoretically derived) relationships among different sets of variables. They can be viewed as a special case of structural equation modelling (SEM), since they do not include latent variables, but only manifest indicator variables (Aichholzer 2017, p. 6). Similar to SEM, it is possible to estimate causal relationships of several variables simultaneously and thus integrate several dependent—or endogenous—variables into one model, as shown in Fig. 1 above. By using path models, we have the possibility to correlate the endogenous variables—income and social capital—after controlling for causal relationships of exogenous and endogenous variables.

### 4.3 Variables

We apply LCA to ten questions from the Austrian Social Survey that are common proxies for social capital and are referred to as the position generator (Engbers et al. 2017; van der Gaag et al. 2008; Lin et al. 2001). These questions reflect a person's social capital by asking them whether they know e.g., a bus driver, car mechanic, lawyer, school teacher, nurse or police officer (Lin and Dumin 1986).<sup>4</sup> The position generator “has proven to be not only a consistently constructed but also popular and consistently applied method for the measurement of social capital” (van der Gaag et al. 2008, p. 27). These indicators are transformed into dichotomous variables in order to include them into latent class analysis. If the person listed in response to this question was a close friend, family member or part of their personal environment, we assumed that the person with this profession was part of the respondent's social network (Lin and Dumin 1986). As endogenous variables in the path model, we use

<sup>4</sup> The list of indicator variables and the descriptive statistics are provided in the following section (Table 1 and Fig. 2) and the appendix (Table 4).

the previously calculated predicted probabilities of group memberships in terms of social capital, as well as the continuous variable of monthly individual income of dependent and independent employees. As exogenous variables we include gender (reference category: men) and education (reference category: compulsory schooling). The education variable is based on the International Standard Classification of Education (ISCED 2011), which was reduced to five categories to avoid categories with few cases.<sup>5</sup> Further we include the respondent's occupation based on the International Standard Classification of Occupations (ISCO 2008) classification (reference category: unskilled workers including major group 8 (plant and machine operators and assemblers) and elementary occupations)<sup>6</sup> and subjective social origin which is operationalized through the self-assessment of family background on a 10-point scale. We used Stata 15 for the empirical analyses in this paper.

## 5 Empirical results

### 5.1 Measuring social capital in Austria: latent class analysis

In a first step, Table 1 provides the descriptive statistics of the indicator variables referring to the position generator. On the one hand, we find that the respondents are least likely to know lawyers (37%), human resource managers (37%) or senior executives (35%). On the other hand, the respondents most frequently state that they know hairdressers (67%), car mechanics (69%) or nurses (66%). Regarding the types of the ties, our results reveal that in each occupational group weak ties (the respondent knows someone) outweigh strong ties (family members and friends).

In the next step of the analysis, the ten position-generator variables were submitted to latent class analysis (van der Gaag et al. 2008; Lin et al. 2001). In Table 3 in the appendix, we present the goodness-of-fit statistics reflecting one's social capital by displaying the log-likelihood, the associated BIC and AIC, and the improvement of the goodness-of-fit measures of the models compared to models with fewer social capital groups. Although the five-group solution yields marginally better results based on goodness-of-fit indicators (AIC: 14.178; BIC: 14.117), we decided to use the four-group solution since it is only marginally worse in terms of statistical indicators (AIC: 14.397; BIC: 14.392), but theoretically more reasonable (Bacher and Vermunt 2010). The LCA summary of the concept of social capital includes the responses of ten indicators by 1199 individuals.

In Fig. 2a, b we present descriptive characteristics of the four groups of social networks, which emerged from the LCA procedure. Fig. 2a shows the size of the

<sup>5</sup> The ISCED 2011 classification maintained by UNESCO classifies educational levels in an internationally comparable framework. ISCED comprises nine categories, from pre-primary education to doctoral or equivalent.

<sup>6</sup> The ISCO 2008 standard is a classification structure for organizing information concerning occupations and jobs. It comprises ten major groups: managers; professionals; technicians and associated professionals; clerical support workers; service and sales workers; skilled agricultural; forestry and fishery workers; craft and related trades workers; plant and machine operators and assemblers; elementary occupations; armed forces occupations.

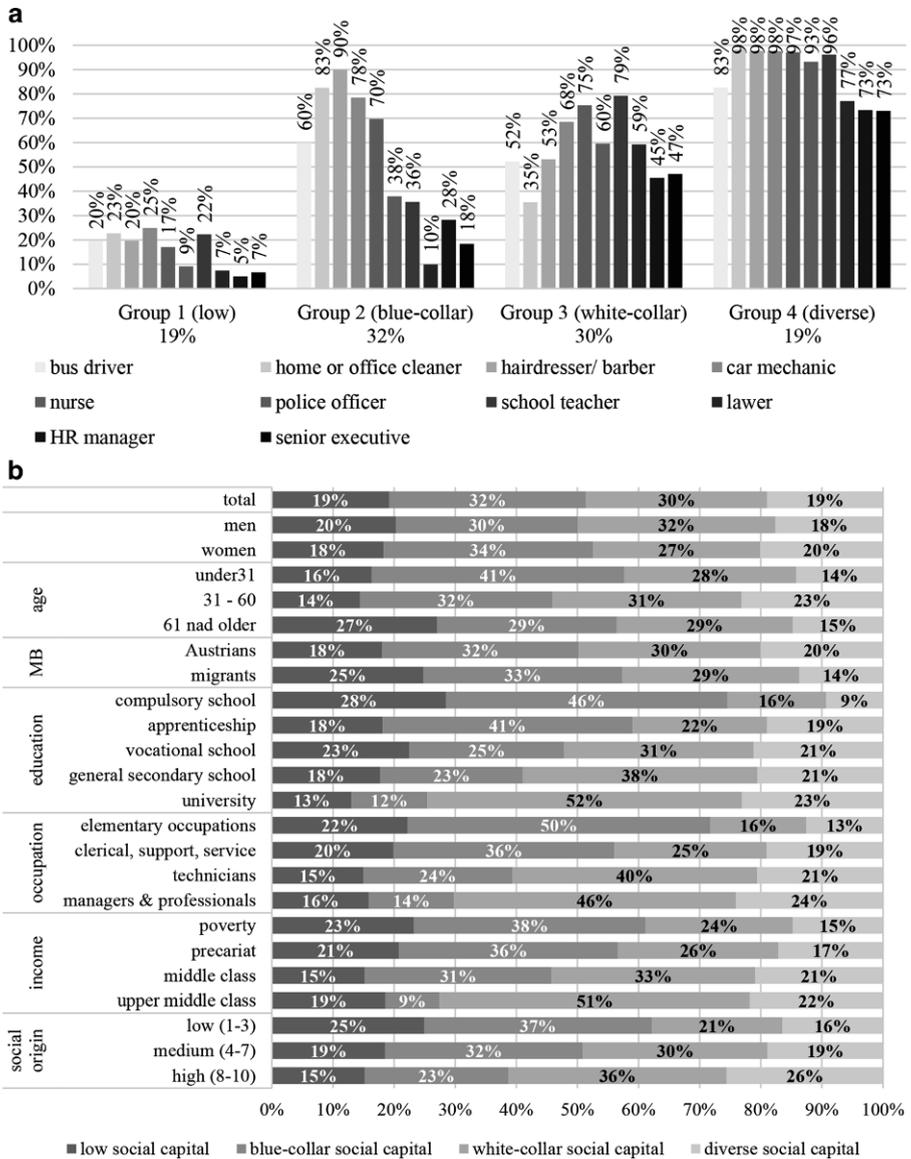
**Table 1** Descriptives on social network variables (%)*Question: Do you know a woman or a man who is ...?*

	No	Yes	Family or relative	Close friend	Someone else I know
a bus driver	46	54	11	15	28
a home or office cleaner	40	60	11	15	34
a hairdresser/barber	33	67	14	20	33
a car mechanic	31	69	18	25	26
a nurse	34	66	23	19	24
a police officer	51	49	11	14	24
a school teacher	43	57	20	15	22
a lawyer	63	37	6	12	19
a human resource manager/ personnel manager	63	37	8	10	19
a senior executive of a large company	65	35	7	9	18

Source: Calculations based on data from the Austrian Social Survey 2018

four classes (in terms of the proportion of the total sample) and the conditional probabilities of the class members to know people with certain occupations (Owen and Videras 2009). Our analysis reveals that we can subdivide our sample into four social capital groups of about equal size. Group 1 on the very left side of Fig. 2a (about 19% of the total sample) reveals comparatively low probabilities of knowing any of the predefined persons included in the position generator variables. These probabilities range from approximately 25% (knowing a car mechanic) to 5% (knowing a human resource manager). We characterize this group as having low social capital.

On the other hand, respondents in group 4 (about 19% of the sample) are much more likely to know people from all ten categories of professions that are included in the position generator variables (very right side of Fig. 2a). Here the conditional probabilities for each indicator are continuously high. For example, the probability of knowing a home or office cleaner is just as high as that of knowing a nurse or school teacher for individuals within group 4 (both more than 95%). However, the individual probability of knowing a lawyer, personal manager or senior executive likewise accounts for more than 70% compared to 35% to 37% in the overall population. Thus, this group shows access to various different spheres of society and is described as a group with diverse social capital. Respondents belonging to the second group have higher probabilities of knowing blue collar workers—a bus driver (60%), a home or office cleaner (83%) or a car mechanic (78%)—but are simultaneously less likely to know a lawyer (10%) or senior executive (18%). In line with this, we claim that this group is a class-specific blue-collar social capital group. In group 3 we observe opposite trends. Here the likelihood of knowing white-collar workers—e.g. somebody who is a lawyer (60%) or a human resource manager (45%)—is on average higher compared to knowing an office cleaner (35%) for example. We refer to this group as a white-collar social capital group. This network,



**Fig. 2** Social capital. **a** Conditional response probabilities in relation to group membership. **b** Describing social capital. (Source: Calculations based on data from the Austrian Social Survey 2018; unweighted analyses; occupation (ISCO-1 digit): a) managers and professionals, b) technicians and associate professionals, c) clerical, service, sales workers/skilled agricultural, forestry and fishery workers craft/related trades workers, d) plant and machine operators, and assemblers & elementary occupations)

again, seems to be quite homogenous (Foster et al. 2003; Patulny and Svendsen 2007; Carrillo Álvarez and Riera Romani 2017).

In Fig. 2b we compare the size (proportion) of the four social-capital classes among different socio-demographic groups. We include gender, age, migration background, education, occupation, income and the self-assessment of social origin. In these analyses we observed minor gender differences (O'Neill and Gidengil 2006; Van Emmerik 2006; McDonald and Mair 2010): women have blue-collar networks more often than men; however, in regard to the diversity of the network the gender differences are rather small. These descriptive results confirm the expected association between gender and unequally distributed social capital. In terms of age, the younger age group (under 30 years) predominantly has access to blue-collar social capital (41%). In addition, individuals aged between 31 and 60 frequently have a more diverse network than older respondents. Further, as one could have anticipated, we observe that within the group of individuals with compulsory education, 46% are in a blue-collar network. This trend also holds for individuals with an apprenticeship as their highest completed level of education (41%). On the contrary, the respondents with a university degree largely have access to white-collar social capital (52%). In line with this, the majority of individuals employed in an elementary occupation are assigned to a blue-collar social network (50%), whereas the majority of managers and professionals (46%) belong to a white-collar network. We were also able to identify trends in the distribution of network groups according to subjective social origin: Respondents who assess their social origin higher are more likely to be assigned to a white collar or diverse network than respondents who rate their social origin lower.

## 5.2 The relation between social capital and social origin: path modelling

In Sect. 5.1, we used latent class analysis in order to measure individual social capital in Austria. In the present section, we use these previous findings in path model estimations where we employ the predicted probabilities for being in a certain group as the dependent variable and socio-economic characteristics (such as age and migration background) and individual characteristics (such as education and occupation) as explanatory factors. To account for the differences in the group affiliation (e.g. diverse or low social capital) we accordingly present four models, one model for each group of social capital.

Table 2 presents our path models based on unstandardized coefficients. First of all, we have argued in our first hypothesis, that higher self-assessment of social origin is related to a lower diversity of social capital and associated with higher accessibility of white-collar social capital (H1). Our models confirm, that social capital is significantly related to one's social background, insofar as the higher a respondent assesses their social origin, the greater the probability that they belong to a white-collar network and the lower the probability that they belong to a blue-collar network. As assumed, the effects of subjective social origin on blue- and white-collar social capital are mediated by education and occupation (Bian and Zhang 2001; Geißler 2006). In the path model, the effects of social origin on education and occupation are significant; however, we also observe that education and occupation

only affect class-specific social capital (significant on the 5% level). Thus, education and occupation mediate the effect of social origin only with regard to the probability of belonging either to the blue- or to the white-collar network.<sup>7</sup> We can further see that higher social origin is directly related to the probability of being in a more diverse network—contrary to what we have expected. So based on our findings, we cannot support Lin's (2001a, 2001b) argument that in the upper strata of social hierarchy networks tend to be smaller, more dense and more close. Nevertheless, growing up in an upper-class family raises the chances of accessing prestigious social capital.

The second hypothesis expects both the diversity of social capital and the access to prestigious white-collar networks to grow with educational achievement (H2). Our models reveal that education has a direct influence on social capital (von Otter and Stenberg 2015). As presumed, we observe that higher individual educational attainment levels are associated with lower probabilities of belonging to a blue-collar network; just as individuals with tertiary degrees or secondary schooling have a higher chance of belonging to a white-collar network (Behtoui 2007). However, contrary to our hypothesis, education does not affect the probability of having low or diverse social capital. Thus, education affects the class-specific social capital of a person but has no statistically significant influence on the diversity of social capital.

In the third hypothesis, we stated that higher individual income and higher occupational status is related to higher social capital diversity (H3). Based on our findings, we do not find a significant direct effect of occupational status on the probability of belonging to a diverse network. Nevertheless, we observe that the individual occupation affects the probability of gaining class-specific social capital. That is, the higher the occupational status, the more likely a person is to have access to white-collar social capital. Further the penultimate row of Table 2 reports the correlation of the error terms of income with the probability of belonging to one of the four social capital groups. After controlling for the effects of (1) subjective social origin (direct and indirect effects), and (2) education and occupation on social capital and income, we can only find a weak correlation of income and social capital. However, the correlation corresponds to the hypothesis insofar as higher income is associated with a higher probability of belonging to a more diverse social capital group. Finally, our fourth hypothesis assumes that women have lower network diversity as well as a higher level of access to blue-collar networks compared to men (H4). In general, the gender variable has less statistical effect on social capital compared to education, occupation or social origin. These findings are in line with Behtoui (2007); Cross and Lin (2008). Yet, although gender has no significant influence on belonging to a diverse network, we observe that women are somewhat less likely to be in a white-collar network compared to men (Volker et al. 2008).

In general, our results support two main findings: on the one hand, we can observe that diversity of social capital is strongly dependent on the self-assessment of the respondent's social origin, while education and occupation play a subordinate role. On the other hand, in addition to social origin, the proximity to white-collar

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<sup>7</sup> The reduction of the effects of social origin when education and occupation are integrated into a model (without indirect effects) is shown in Table 6 in the appendix.

**Table 2** Unstandardized coefficients of the path models (N = 858)

Regression:	MI		MII		MIII		MIV		MI-MIV		MI-MIV		MI-MIV	
	Low soc. cap.	Blue-collar soc. cap.	Blue-collar soc. cap.	White-collar soc. cap.	White-collar soc. cap.	Diverse soc. cap.	Diverse soc. cap.	Income	Income	Educ.	Educ.	Occup.	Occup.	
	Linear		Linear		Linear		Linear		Linear		Multinomial logistic		Multinomial logistic	
<b>Exogenous Variables</b>														
<i>Subjective Social Origin</i>	-0.02 <sup>**</sup>	-0.01 <sup>+</sup>		0.01 <sup>*</sup>		0.01 <sup>*</sup>		3						
<i>Education (ref.: compulsory school)</i>														
Apprenticeship	-0.03	-0.03		0.00		0.06 <sup>+</sup>		305 <sup>***</sup>						
Vocational school	0.01	-0.15 <sup>***</sup>		0.07 <sup>+</sup>		0.07		344 <sup>***</sup>						
Secondary school	-0.02	-0.16 <sup>***</sup>		0.12 <sup>**</sup>		0.07		470 <sup>***</sup>						
University	-0.05	-0.23 <sup>***</sup>		0.22 <sup>***</sup>		0.06		514 <sup>***</sup>						
<i>Occupation (ref.: unskilled workers)</i>														
Skilled workers	-0.00	-0.09 <sup>**</sup>		0.07 <sup>*</sup>		0.03		-20						
Technicians	-0.05	-0.15 <sup>***</sup>		0.17 <sup>***</sup>		0.04		234 <sup>**</sup>						
Managers and prof.	-0.02	-0.19 <sup>***</sup>		0.15 <sup>***</sup>		0.06		319 <sup>**</sup>						
<i>Women (ref.: men)</i>														
Women	-0.03	0.06 <sup>**</sup>		-0.06 <sup>**</sup>		0.03		-367 <sup>***</sup>						
<i>Controls: Age, MB</i>														
Controls	X	X		X		X		X						
<b>Correlation of error terms</b>														
Income	-7.79	-14.96 <sup>*</sup>		11.11		12.33 <sup>+</sup>		-						
Variance	0.11	0.11		0.10		0.11		392,922.8						

Source: Calculations based on data from the Austrian Social Survey 2018

Controlled for migration background and age

<sup>+</sup>p < 0.100, \* p < 0.050, \*\* p < 0.010, \*\*\* p < 0.001

and blue-collar professions is more strongly determined by one's own educational background and profession. In order to relate our findings to other research in this field we calculated some additional sensitivity analyses. We operationalized the access to social capital with the help of principal component analyses based on the position generator variables as suggested by Lin et al. (2001). When we follow Lin's approach, our findings reveal a strong relationship between subjective social origin and access to social capital, but we cannot find distinct effects of education and occupation (see Table 5 in the appendix). Our analytical approach (using LCA) permits an alternative analysis of the position generator than the approach of Lin; however, the comparison between the two approaches shows, that the substantive results concerning the social network of different social status groups are rather similar.

When it comes to the remaining general findings, these are in line with other research in this field and support well established associations between income, education, occupation and gender (Breen et al. 2010; Bergmann et al. 2019; Smith 2000). In short, we observe that women earn considerably less than men; a fact that is extremely well studied in Austria and has only started to slowly change during the last decades (Fritsch et al. 2019). Further we observe that income increases with individual educational attainment. Here highly educated individuals holding a university degree earn markedly more compared to the reference category of respondents with compulsory schooling. Correspondingly, the concrete occupation also matters: for example, technicians and managers earn more than unskilled workers.

## 6 Conclusion

The aim of the paper is to analyze the structure of social capital in contemporary Austria by shedding light on the role of perceived social origin. We intend to attain this aim by applying latent class analysis (LCA) and path modelling on data obtained from the 2018 Austrian Social Survey using a network-as-capital approach following Lin's (2001b) position generator. Based on this approach, we first identify four groups that differ in their profile of social capital. Besides low and diverse social capital we further differentiate between blue-collar and white-collar social capital. In a second step, we study the extent to which these different social capital groups are related to one's self-assessed social background. This is especially important in Austria, since one's family background functions as a valuable predictor of an individual's future position within the social hierarchy.

Therefore, our main findings reveal that perceived social origin has a significant effect on social capital. Hence respondents with higher levels of self-assessed social origin are associated with having a more diverse and more prestigious network structure (von Otter and Stenberg 2015). Furthermore, one can argue, that higher levels of subjective social origin tend to be linked to a diverse social capital structure (which might indicate some form of bridging), whereas educational achievement and occupation seem to reinforce social contact within one's own social environment (which

one could interpret as a first step for bonding social capital).<sup>8</sup> These findings are consistent with research showing that social capital is strongly influenced by its relationship to the reproduction of social inequality (Pichler and Wallace 2009). Unequally distributed and structurally rooted access to social capital is also considered in our paper; a crucial issue particularly in times when matters of social inequality tend to be individualized (Lin 2000). In this respect, our analyses show that various social characteristics have an influence on the specific type of access to social capital. Individual educational attainment and occupational status seem to be equally important in terms of their effects on class-specific forms of social capital (McDonald and Mair 2010; Gesthuizen et al. 2008; Horvat et al. 2003). On the contrary, gender differences play a less prominent role in Austria than one could have expected from existing research literature (Lutter 2015; O'Neill and Gidengil 2006; Van Emmerik 2006).

Finally, we also need to address some limitations in our study. In particular we need to mention that our study would benefit if we could further elaborate differences between subjective and objective factors influencing social capital. For example, it would be fruitful to contrast the effects of self-assessment of one's social background with objective measures such as parent's educational achievements or the concrete parental labor market position. Based on our data, we are not able to compare these sets of variables. Hence, future studies could analyze these aspects, but moreover expand existing knowledge by exploring individual social capital through investigating the social capital of people experiencing social mobility. In other words; what is the relationship between the types of social capital and upward or downward social mobility? For instance, do people extend their blue-collar network by experiencing upward mobility or do they lose their social capital? And even the other way around: To what extent does social capital enhance upward social mobility in Austria? Furthermore, it would be rewarding to identify certain risk groups facing difficulties in societal participation. This is especially relevant for vulnerable social groups, as studies show that social capital affects the health of older people more strongly than that of younger people (Muckenhuber et al. 2013). We differentiated social capital into quality and quantity, but in addition it would be interesting to gain insight into variations between "old" and "new" forms of social capital (Townsend et al. 2016; Williams 2006), in particular the utilization of social media and its relevance in accumulating social capital.

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<sup>8</sup> Nevertheless, we have to point out, that based on our dataset and variables we do not analyze the special features of the concepts of bridging and bonding. Therefore, further research is needed.

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## Appendix

**Table 3** LCA social capital (model selection and fit statistics)

	N	LL	AIC	BIC	PV0	PVj	LR-Diff
1 Group	1199	-7883.16	15,786.33	15,837.22	–	–	–
2 Groups	1199	-7282.58	14,607.16	14,714.04	7.62%	7.62%	1201.16
3 Groups	1199	-7152.29	14,368.59	14,531.44	9.27%	1.79%	260.58
<b>4 Groups</b>	<b>1199</b>	<b>-7046.10</b>	<b>14,178.20</b>	<b>14,397.04</b>	<b>10.62%</b>	<b>1.48%</b>	<b>212.39</b>
5 Groups	1199	-7004.70	14,117.41	14,392.23	11.14%	0.59%	82.79
6 Groups	1199	-6988.92	14,107.85	14,438.66	11.34%	0.23%	31.55
7 Groups	Do not converge						

Source: Calculations based on data from the Austrian Social Survey 2018; unweighted analyses

**Table 4** Conditional knowledge/approval in relation to group membership (latent class analysis)

	Group 1	Group 2	Group 3	Group 4
Cluster size	19	32	30	19
<i>Question: Do you know a woman or a man who is ...?</i>				
a bus driver	20	60	52	83
a home or office cleaner	23	83	35	98
a hairdresser/barber	20	90	53	98
a car mechanic	25	78	68	98
a nurse	17	70	75	97
a police officer	9	38	60	93
a school teacher	22	36	79	96
a lawyer	7	10	59	77
a human resource manager/personnel manager	5	28	45	73
a senior executive of a large company	7	18	47	73

Source: Calculations based on data from the Austrian Social Survey 2018

**Table 5** Lin's operationalisation of social capital: Access to social capital is the weighted sum of diversity (number of positions accessed), range and upper reachability of the respondent's network. Standardized coefficients of the path models ( $N=812$ )

	Access to soc. cap.	Income
<b>Exogenous Variables</b>		
<i>Subjective Social Origin</i>	0.19***	-0.00
<i>Education (ref.: compulsory school)</i>		
Apprenticeship	0.08	0.21***
Vocational school	0.08	0.16***
Secondary school	0.11 <sup>+</sup>	0.24***
University	0.14 <sup>*</sup>	0.27***
<i>Occupation (ref.: unskilled workers)</i>		
Skilled workers	0.15**	-0.01
Technicians	0.18***	0.12**
Managers and prof	0.18**	0.18**
<i>Women (ref.: men)</i>	0.03	-0.27***
<i>Controls: Age, MB</i>	X	X
<b>Correlation of error terms</b>		
<i>Income</i>	0.09 <sup>*</sup>	-
<i>Variance</i>	0.86	0.77

Source: Calculations based on data from the Austrian Social Survey 2018

Controlled for migration background and age

<sup>+</sup> $p < 0.100$ , <sup>\*</sup> $p < 0.050$ , <sup>\*\*</sup> $p < 0.010$ , <sup>\*\*\*</sup> $p < 0.001$

**Table 6** Standardized coefficients of the path models ( $N=858$ )

	Low soc. cap.	Blue-collar soc. cap.	White-collar soc. cap.	Diverse soc. cap.	Income cap.
<b>Step 1</b>					
Exogenous Variables					
<i>Social Origin</i>	-0.16***	-0.13***	0.15***	0.15***	0.07*
<i>Education</i>	-	-	-	-	-
<i>Occupation</i>	-	-	-	-	-
<i>Gender</i>	-	-	-	-	-
Correlation of error terms					
<i>Income</i>	-0.05	-0.19***	0.17***	0.09**	-
<i>Variance</i>	0.97	0.98	0.98	0.98	0.99
<b>Step 2</b>					
Exogenous Variables					
<i>Social Origin</i>	-0.15***	-0.05	0.07*	0.13***	-0.02
<i>Education</i>	X	X	X	X	X
<i>Occupation</i>	-	-	-	-	-
<i>Gender</i>	-	-	-	-	-
Correlation of error terms					
<i>Income</i>	0.04	-0.12***	0.10**	0.07*	-
<i>Variance</i>	0.97	0.89	0.90	0.97	0.90
<b>Step 3</b>					
Exogenous Variables					
<i>Social Origin</i>	-0.15***	-0.08*	0.10**	0.13***	0.03
<i>Education</i>	-	-	-	-	-
<i>Occupation</i>	X	X	X	X	X
<i>Gender</i>	-	-	-	-	-
Correlation of error terms					
<i>Income</i>	-0.04	-0.12***	0.09**	0.07*	-
<i>Variance</i>	0.97	0.91	0.91	0.97	0.90
<b>Step 4</b>					
Exogenous Variables					
<i>Social Origin</i>	-0.16***	-0.13***	0.15***	0.15***	0.07*
<i>Education</i>	-	-	-	-	-
<i>Occupation</i>	-	-	-	-	-
<i>Gender</i>	X	X	X	X	X
Correlation of error terms					
<i>Income</i>	-0.06+	-0.18***	0.15***	0.10**	-
<i>Variance</i>	0.97	0.98	0.97	0.98	0.92

Source: Calculations based on data from the Austrian Social Survey 2018

+ $p < 0.100$ , \* $p < 0.050$ , \*\* $p < 0.010$ , \*\*\* $p < 0.001$

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